

# CLAIMS

We claim:

1. A computer system for fault-tolerant distributed collaborative computing, the system  
5 comprising:

a plurality of server computers connected to a plurality of client computers via a global-area computer network;

10 a high-speed direct connection link connecting the plurality of server computers; and

a computer program executable by the server computers, wherein the computer program comprises computer instructions for:

15 conducting an on-line conference among an arbitrary number of the client computers connected to an arbitrary number of the server computers via the global-area network and the high-speed direct connection link;

20 detecting a failure of one of the server computers handling the on-line conference;

disconnecting the failed server computer from the on-line conference;

25 connecting another of the server computers to the conference; and

resuming the on-line conference.

2. The computer system of claim 1, wherein the computer program further comprises computer instructions for:

30 periodically replicating state information among processes executed by the server computers to conduct the on-line conference;

detecting a failure of one of the process;  
spawning a new process on the server  
computers; and  
loading the replicated state information on  
5 the new process.

3. The computer system of claim 2, wherein the  
processes whose state is replicated maintain  
information about the on-line conference.

10 4. The computer system of claim 2, wherein the  
processes whose state is replicated handle  
communications between one of the client computers and  
one of the server computers.

15 5. The computer system of claim 2, wherein the  
processes whose state is replicated control access to a  
document shared among participants of the on-line  
conference.

20 6. The computer system of claim 2, wherein the  
processes whose state is replicated control execution  
of an application shared among participants of the on-  
line conference.

25 7. A method of operating a distributed  
collaborative computing system comprising a plurality  
of server computers, the method comprising:  
conducting an on-line conference among an  
30 arbitrary number of the client computers connected  
to an arbitrary number of the server computers via

the global-area network and the high-speed direct connection link;

detecting a failure of one of the server computers handling the on-line conference;

5        disconnecting the failed server computer from the on-line conference;

connecting another of the server computers to the conference; and

resuming the on-line conference.

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8. The method of claim 7, further comprising:  
periodically replicating state information among processes executed by the server computers to conduct the on-line conference;

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detecting a failure of one of the process;  
spawning a new process on the server computers; and

loading the replicated state information on the new process.

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9. The method of claim 8, wherein the processes whose state is replicated maintain information about the on-line conference.

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10. The method of claim 8, wherein the processes whose state is replicated handle communications between one of the client computers and one of the server computers.

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11. The method of claim 8, wherein the processes whose state is replicated control access to a document shared among participants of the on-line conference.

12. The method of claim 8, wherein the processes  
whose state is replicated control execution of an  
application shared among participants of the on-line  
5 conference.

13. A computer-readable storage medium storing a  
computer program executable by a plurality of server  
computers, the computer program comprising computer  
10 instructions for:

conducting an on-line conference among an  
arbitrary number of the client computers connected  
to an arbitrary number of the server computers via  
the global-area network and the high-speed direct  
15 connection link;

detecting a failure of one of the server  
computers handling the on-line conference;

disconnecting the failed server computer from  
the on-line conference;

20 connecting another of the server computers to  
the conference; and

resuming the on-line conference.

14. The computer-readable storage medium of claim  
25 13, wherein the computer program further comprises  
computer instructions for:

periodically replicating state information  
among processes executed by the server computers  
to conduct the on-line conference;

30 detecting a failure of one of the process;  
spawning a new process on the server  
computers; and

loading the replicated state information on  
the new process.

15. The computer-readable storage medium of claim  
5 14, wherein the processes whose state is replicated  
maintain information about the on-line conference.

16. The computer-readable storage medium of  
claim 14, wherein the processes whose state is  
10 replicated handle communications between one of the  
client computers and one of the server computers.

17. The computer-readable storage medium of  
claim 14, wherein the processes whose state is  
15 replicated control access to a document shared among  
participants of the on-line conference.

18. The computer-readable storage medium of  
claim 14, wherein the processes whose state is  
20 replicated control execution of an application shared  
among participants of the on-line conference.